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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/831,364	08/29/2001	Pierre Gandel	208289US2PCT	9683

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EXAMINER

JONES, JUDSON

ART UNIT PAPER NUMBER

2834

DATE MAILED: 11/21/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/831,364

Applicant(s)

GANDEL ET AL. 

Examiner

Judson H. Jones

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☐ Claim(s) ____ is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 17-21, 23-27 and 29-32 is/are rejected.
- 7) ☒ Claim(s) 22 and 28 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☒ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 7, 8.
- 4) ☐ Interview Summary (PTO-413) Paper No(s) ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 17 is rejected under 35 U.S.C. 102(b) as being anticipated by Ward et al.

5,015,622. Ward et al. discloses a magnet 16 as shown in figure 4 with a primary air gap between the magnet and poles 49 as shown in figure 5A with first secondary and second secondary air gaps between the poles and adjacent poles which provide motion in two degrees of freedom as described in column 10 lines 37-61.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 17-21, 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hazelton et al. 6,208,045 in view of Ward et al. and Niikura 5,023,496. Hazelton et al. discloses a planar motor (i.e., a bi-directional actuator) using coils and ferromagnetic poles as shown in figure 1A but does not disclose a single magnet. However reducing the size of a bi-directional actuator by eliminating the additional magnets that allow fine positioning of the movable member relative to the stationary member is not a patentable advance. See *In re Rose*, 105 USPQ

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237 (CCPA 1955). Niikura discloses a linear motor reduced to the bare essentials and having a single magnet and two coils as shown in figure 9 but does not disclose a planar motor reduced to its bare essentials. However Ward et al. discloses a single magnet controlled by coils as shown in figure 1. While there are differences between the way a superconductive device such as disclosed by Ward et al. and the way an electromagnetic device operates, both operate to move a magnet by pushing or pulling it. Since Ward et al., Niikura and Hazelton et al. are all from the same field of endeavor, it would have been obvious at the time the invention was made for one of ordinary skill in the art to have reduced the size of the device of Hazelton et al. by making it have one movable magnet surrounded by four coils.

In regard to claim 18, see Hazelton et al. column 5 lines 34-40 for disclosure of poles of soft magnetic material and the alternative of posts for holding the coils with the posts made from magnetic impermeable material.

In regard to claims 20 and 23, see Niikura figure 9 and see Hazelton et al. figure 3A. In Hazelton et al. a device is shown with four coils covering 9 magnets. Reducing the size of the planar device to its bare essentials would result in a single coil covering 4 magnets as shown by coil 406 and magnets 440, 442, 444, 446 in Hazelton et al. figure 3A and as described in column 8 lines 15-21, with the relative sizes of the coil and magnet array requiring adjustment, to make the device operational. Niikura teaches the alternative of a single magnet and multiple coils in figure 9.

In regard to claim 21, according to *In re Aller*, 105 USPQ 233 (CCPA 1955) "More particularly where the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation." Therefore

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the range for the ratio of the thickness of the magnet and the air gap is given no patentable weight. See also Drew 6,466,119 B1 column 4 lines 41-45, which discloses the ratio claimed.

In regard to claims 24-26, see Hazelton et al. column 13 lines 46-55 where Hazelton et al. mentions cylindrical arrangements (i.e., tubular) and using latitudinal and longitudinal directions, which correspond to the axial translation and axial rotation recited in the claim.

In regard to claims 27 and 29, see Hazelton et al. column 13 lines 46-55 where Hazelton et al. mentions spherical arrangements for magnets and coils. In regard to the 4 stator poles claimed, see Niikura figure 9 and Ward et al. figure 5A.

Claims 30 and 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hazelton et al. in view of Ward et al. and Niikura as applied to claim 17 above, and further in view of Gillum 3,723,780. Hazelton et al. as modified by Ward et al. and Niikura discloses the bi-directional actuator but does not disclose a cup formed by two pieces in the form of a hemisphere to enclose a spherical magnet. However Gillum teaches in column 5 lines 1-19 the advantages of enclosing magnets in order to reduce flux losses. Since Gillum and Hazelton et al. as modified by Ward et al. and Niikura are both from the same field of endeavor, it would have been obvious at the time the invention was made for one of ordinary skill in the art to have enclosed a spherical magnet in a spherical cup in order to reduce flux loss and thus increase the efficiency of the device.

In regard to the claimed magnet being formed from two hemispheres or sphere quarters and a stator structure formed from two hemispherical stator pieces as recited in claim 31, according to *In re Lockhart*, 90 USPQ 214 (CCPA 1951), "There is also a requirement that unification or integration involve more than mere mechanical skill." The act of dividing the

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magnet and stator structure into pieces is given no patentable weight. Furthermore, the act of dividing the magnet and stator structure into two or more identical pieces to make the stocking of parts easier is also given no patentable weight.

Allowable Subject Matter

Claims 22 and 28 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter: The prior art of record does not disclose or teach a bi-directional actuator with the dimensions of a magnet being $C_1 + d_1 + E$ and $C_2 + d_2 + E$ as recited in claim 22. The prior art of record does not disclose or teach a magnet with a spherical shape which is moved in rotation relative to a stator structure of tubular shape as recited in claim 28.

Any inquiry concerning this communication should be directed to Judson H Jones whose telephone number is 703-308-0115. The examiner can normally be reached on 8-4:30 M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nestor Ramirez can be reached on 703-308-1371. The fax phone numbers for the organization where this application or proceeding is assigned are 703-305-3431 for regular communications and 703-305-3432 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

JHJ

November 20, 2002

Judson H Jones
AU 2834